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\*ex-offici

**MAUNAKEA STEWARDSHIP AND  
OVERSIGHT AUTHORITY**

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December 27, 2024

The Honorable Ronald D. Kouchi,  
President  
and Members of the Senate  
Thirty-Third State Legislature  
State Capitol, Room 409  
Honolulu, Hawaii 96813

The Honorable Nadine Nakamura,  
Speaker  
and Members of the House of  
Representatives  
Thirty-Third State Legislature  
State Capitol, Room 431  
Honolulu, Hawaii 96813

Dear Senate President Kouchi, Speaker Nakamura, and Members of the Legislature:

Pursuant to Act 255, SLH 2022, I am transmitting the second Annual Report from the Mauna Kea Stewardship and Oversight Authority (Authority) on the management actions, plans, reports, reviews, assessments, and impacts on Mauna Kea during the past twelve months of work.

In accordance with Section 93-16(a), HRS, a copy of this report will be transmitted to the Legislative Reference Bureau Library and will be viewable on the Authority's website at <http://dlnr.hawaii.gov/maunakea-authority/>.

Sincerely,

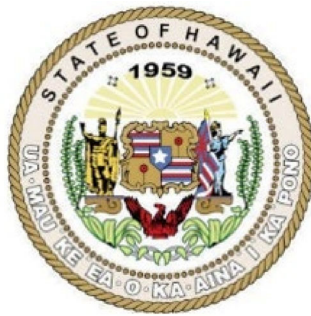
*John De Fries*

JOHN DE FRIES  
Executive Director

Enclosure

REPORT TO THE THIRTY-THIRD LEGISLATURE  
STATE OF HAWAII  
2025 REGULAR SESSION

MAUNA KEA STEWARDSHIP AND OVERSIGHT AUTHORITY  
ANNUAL REPORT



PREPARED BY THE:

**MAUNA KEA STEWARDSHIP AND OVERSIGHT AUTHORITY**

IN RESPONSE TO:

Act 255, Session Laws of Hawaii 2022

December 2024

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## I. INTRODUCTION

The Mauna Kea Stewardship and Oversight Authority (Authority) is in the second year of a transition period that ends on June 30, 2028; thereafter, the Authority will assume full responsibility for the Mauna Kea lands under the existing lease agreements between the University of Hawai'i and the Department of Land and Natural Resources.

The Authority continues to be directed by a 12-member board (11-voting members) which includes the following individuals:

- Board Chair:
  - John Komeiji
- Board Members:
  - Douglass Adams (until December 1, 2024)
  - Mayor Christian (Kimo) Alameda (from December 2, 2024)
  - Kamanamaikalani Beamer (until June 30, 2024)
  - Pomaikalani Bertelmann
  - Neil Hannahs (from July 1, 2024)
  - Paul Horner
  - Bonnie Irwin (ex-officio non-voting member)
  - Laura Kaakua (until January 15, 2024)
  - Ryan Kanaka'ole (from January 16, 2024)
  - Gary (Kalehua) Krug Jr.
  - Benjamin Kudo
  - Joshua (Lanakila) Mangauil
  - Richard (Rich) Matsuda
  - Michelle Noe Noe Wong-Wilson

In September 2024, the Authority, and the Center for Maunakea Stewardship (CMS) formed a joint management committee which meets bi-weekly to discuss a variety of strategic and operational issues; and when required, make the necessary decisions, and/or formulate recommendations for consideration by the Authority Board.

## II. MANAGEMENT ACTIONS

The Authority Board Members have worked toward taking actions that will establish the foundation for ensuring that the organization can assume full responsibility after the 5-year transition period to preserve, protect, and responsibly manage the Mauna Kea lands. Although the board did not have staff to assist them in executing actions in the fiscal year 2023, support and/or cooperation from the State Legislature, 'Imiloa Astronomy Center, University of Hawai'i (UH), Center for Maunakea Stewardship (CMS), and Department of Land and Natural Resources has enabled them to proceed with the following:

### **Senior Management Team:**

At the beginning of the fiscal year 2024, the recruitment process for five (5) established and authorized positions began with the solicitation of applications, candidate interviews, job offers, and in quarter four (4), fiscal year 2024, selections were made with employment start dates phasing-in for two (2) senior management positions, that included: Executive Director, John De Fries, and (Interim) Administrative Services Officer, Lloyd Unebasami. Project Director William Stormont started in quarter one (1) of fiscal year 2025. Together with Executive Assistant, Pua'ena Ahn, who started in quarter three (3) of fiscal year 2023, the Authority has a staff of four (4) and open recruitment is on-going for two (2) Program Specialists.

### **Formation of the Joint Management Committee:**

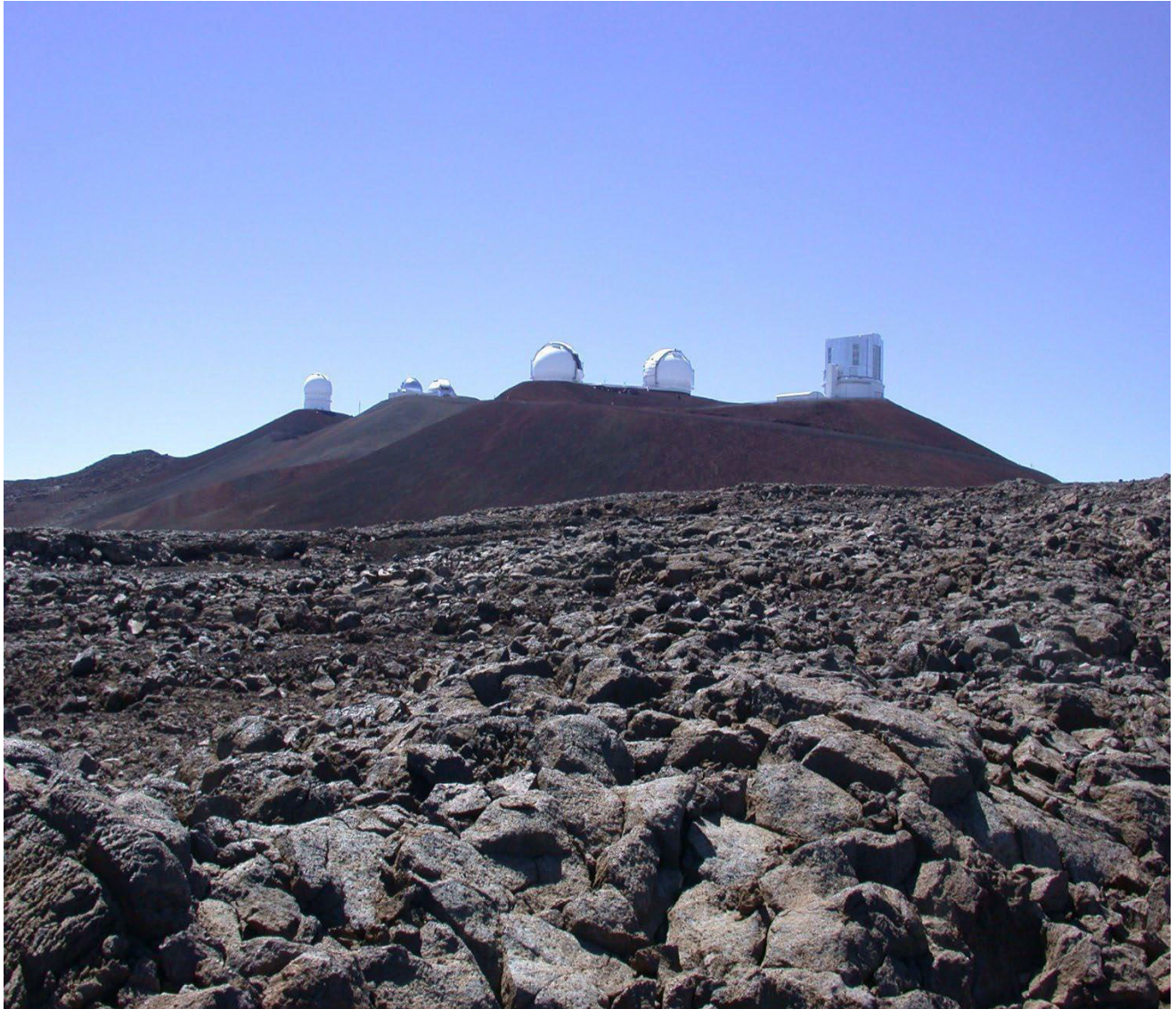
To complement the establishment in fiscal year 2023 of the Co-Management Working Group, a Joint Management Committee (JMC) was formed consisting of senior managers from the Authority, CMS and Maunakea Shared Services (MKSS) that meets bi-weekly to discuss and decide upon key strategic and operational matters that may, at times, result in the Authority staff recommendations to its Board for the current list of roles and responsibilities within the JMC. See Exhibit A.

### **Project Management System:**

Act 255, SLH2022 describes specific responsibilities and general timelines for the Authority while being in a startup mode and operating within a limited transition period that terminates on June 30, 2028. Therefore, a comprehensive project management system is under development that can track the full range of responsibilities (statutory and non-statutory), coupled with all tasks and actions required and provide full transparency across the board. This pilot system is being developed and evaluated on the digital platform Trello.

### **Long Term Transition Working Group (LTTWG):**

The review and vetting of the full complement of assets, liabilities, contracts, agreements, permits, etc. currently held by the University of Hawai'i is the responsibility of the LTTWG which is co-chaired by two (2) Authority board members: Benjamin Kudo and Paul Horner. The LTTWG meets monthly and consists of the senior management and legal counsels respectively from the Authority, CMS, UHS and DLNR. A Request For Proposal was issued for an outside legal team to conduct this process and the firm of McCorrison, Miller, Mukai and MacKinnon were selected.



### III. IMPLEMENTATION OF ALL LEGISLATIVELY REQUIRED PLANS, INCLUDING FINANCIAL AND MANAGEMENT REPORTS, BUDGETS, EXPENDITURES, AND PLANS

The operational expenditure plan for the fiscal year 2025 is included in Exhibit B of this report. An appropriation and allotment reduction of \$10,000,000 from the Authority’s fiscal year 2025 budget was transferred by the Executive Administration to the Major Disaster Fund.

The biennium budget for fiscal years 2026 – 2027 was submitted to the State Legislature for the upcoming legislative session beginning on January 15, 2025. The Authority is also working on determining additional resource needs during the 5-year transition period and will be requesting positions in addition to the current six (6) authorized positions in the approved organization structure.

CMS operates the activities and programs on Mauna Kea while the Authority continues to work with CMS on operational and management issues. CMS has over sixty (60) authorized positions that operate all year around with an annual budget of about \$9 million.

The following is the development of the Authority’s plans to identify all requirements that must be completed during the transition period.

| Card Name  | Card Description  | Labels                    | Members | Due Date                 |
|--|---|---------------------------|---------|--------------------------|
| Transfer of all assets (permits, dispositions, land use approvals, etc.) | Via long-term transition working group<br><br>Notwithstanding any law to the contrary, all powers 11 and duties of the board of land and natural resources pursuant 12 to chapter 171, and the land use commission pursuant to chapter 13 205, concerning permits, dispositions, land use approvals, and 14 any other approvals pertaining to the Mauna Kea lands are 15 transferred to the authority upon the expiration of the 16 transition period | On Track (blue)           |         | 2028-06-30T20:49:00.000Z |
| Conduct Integration Assessment (CMS to MKSOA)                            | Assess current-state of operations for CMS by procuring or creating documentation through interviews<br><br>- systems and software<br>- business process and policy<br><br>Identify any risks/issues for the integration of CMS into MKSOA (e.g., RCUH vs State for employment and payroll)   | On Track (blue)           |         | 2025-03-01T03:02:00.000Z |
| Develop Aspirational Statement   | "to acknowledge and contextualize unresolved social justice issues that underpin the conservation, preservation, and public use of Mauna Kea."  | Not Started (black_light) |         | 2025-02-01T03:02:00.000Z |

| Card Name                             | Card Description   | Labels                    | Members            | Due Date                 |
|---------------------------------------|--|---------------------------|--------------------|--------------------------|
| Develop Community Engagement Strategy | Engagement goes beyond just communications and we need to think about this more broadly  | Not Started (black_light) |                    |                          |
| Develop Communications Strategy       | <p>Communications Strategy should account for:</p> <ul style="list-style-type: none"> <li>- Goals (KPIs)</li> <li>- Audience (stakeholder identification)</li> <li>- Divergent community perspectives (not homogenous)</li> <li>- Native Hawai'ian worldview</li> <li>- Community engagement (e.g., events)</li> <li>- How to gather input from community</li> <li>- Social media strategy (engagement, misinformation, etc.)</li> </ul>   | Not Started (black_light) |                    | 2025-03-04T03:02:00.000Z |
| Develop Roadmap                       | Workshop at HLF, then send out plan for review via email   | On Track (blue)           |                    | 2024-11-29T03:02:00.000Z |
| Implement PMO                         |  | Not Started (black_light) | christopherdaggett | 2024-12-14T03:02:00.000Z |
| Interim Office Space                  |  | On Track (blue)           |                    | 2025-02-12T21:43:00.000Z |
| Long-term Office Space                |  | On Track (blue)           |                    | 2025-01-31T02:30:00.000Z |
| Hale Pohaku Office Space              |  | On Track (blue)           |                    |                          |
| Long-term Office Space: Construction  |  | Not Started (black_light) |                    | 2028-07-01T03:02:00.000Z |
| Develop Framework for Leases          | Prepare for and establish the framework, criteria, and procedures for any leases and permits (astronomy and commercial)  | Not Started (black_light) |                    |                          |
| Develop Framework for Permits         | Prepare for and establish the framework, criteria, and procedures for any leases and permits (astronomy and commercial)  | Not Started (black_light) |                    |                          |
| RFP for Management Plan               |  | On Track (blue)           |                    | 2025-02-04T03:02:00.000Z |
| Develop Management Plan               | <p>The management plan shall:</p> <ol style="list-style-type: none"> <li>(1) Be developed during the transition period;</li> <li>(2) Be finalized, approved, and operational by the end of the transition period;</li> <li>(3) Be updated at least every ten years with a focus on long-term, comprehensive, and coordinated planning for all of the Mauna Kea lands;</li> <li>(4) Consider the State's energy and sustainability goals, as well as impacts to climate change, including adapting to climate change and developing mitigation measures to climate change;</li> <li>(5) Prepare for and establish the framework, criteria, and procedures for any leases and permits;</li> <li>(6) Incorporate indigenous management and</li> </ol> | Not Started (black_light) |                    | 2028-07-01T03:02:00.000Z |



| Card Name   | Card Description  | Labels                    | Members | Due Date                 |
|---|---|---------------------------|---------|--------------------------|
|   | cultural processes and values; and<br><br>(7) Include an aspirational statement to acknowledge and contextualize unresolved social justice issues that underpin the conservation, preservation, and public use of Mauna Kea.  |                           |         |                          |
| Develop Framework for Astronomy-related Development   | The framework may include:<br><br>(1) Limitations on the number of observatories and astronomy-related facilities, or an astronomy facility footprint limitation;<br><br>(2) Prioritizing the reuse of footprints of observatories that are scheduled for decommissioning, or have been decommissioned, as sites for facilities or improvements over the use of undeveloped lands for such purposes; and<br><br>(3) A set of principles for returning the lands used for astronomy research to their natural state whenever observatories are decommissioned or no longer have research or educational value. |                           |         |                          |
| Develop Natural Resources Plan  |   | On Track (blue)           |         |                          |
| Develop Decommissioning Plan  |   | Not Started (black_light) |         |                          |
| Determine how to incorporate indigenous management and cultural processes and values                      |   | Not Started (black_light) |         |                          |
| Determine how the State's energy and sustainability goals should be incorporated into the Management Plan | "Consider the State's energy and sustainability goals, as well as impacts to climate change, including adapting to climate change and developing mitigation measures to climate change"   | Not Started (black_light) |         |                          |
| Develop Access Plan   |   | Not Started (black_light) |         | 2028-06-27T21:43:00.000Z |
| Develop Cultural Resources Plan   |   | Not Started (black_light) |         | 2028-06-27T21:43:00.000Z |
| Develop Education and Outreach Plan   |   | Not Started (black_light) |         | 2028-06-27T21:43:00.000Z |
| Establish Advisory Groups   | Each advisory group should be involved in developing plan for their area  | Not Started (black_light) |         |                          |
| Protect Budget  |   | On Track (blue)           |         |                          |
| Develop Financial Plan  | "The authority shall adopt a financial plan that strives for the financial self-sustainability of the authority after the sixth year following the transitional period established in subsection"   | Not Started (black_light) |         |                          |
| Implement Financial Management  |   | Not Started (black_light) |         | 2025-03-29T08:20:00.000Z |
| Audit 2030 (for transition prior to 2028)   |   |                           |         |                          |

| Card Name  | Card Description   | Labels                    | Members | Due Date                 |
|--|--|---------------------------|---------|--------------------------|
| Recruit Communications Team  | Communications team should be embedded in MKSOA<br><br>Two skillsets that may be separate people/firms: social media and local knowledge/lived experience  | Not Started (black_light) |         | 2025-02-01T08:20:00.000Z |
| Legislative package 2025   |  | On Track (blue)           |         | 2025-01-16T08:20:00.000Z |
| Site Visits for Legislature  |  | Not Started (black_light) |         |                          |
| Interim Report 2024  |  |                           |         |                          |
| Annual Report 2025   |  |                           |         |                          |
| Study and recommend whether a reserve should be established  | Study and recommend whether a reserve should be established  | Not Started (black_light) |         |                          |
| Conduct an assessment on whether the UH school of astronomy should be relocated                                    | Conduct an assessment on whether the University of Hawai'i school of astronomy should be relocated, in whole or in part, to the University of Hawai'i at Hilo; and<br><br>**Include in its study and report any other information on issues relating to the management and protection of Mauna Kea it deems appropriate.** | Not Started (black_light) |         |                          |
| Report any other information on issues relating to the management and protection of Mauna Kea it deems appropriate | Include in its study and report any other information on issues relating to the management and protection of Mauna Kea it deems appropriate  | Not Started (black_light) |         |                          |
| Determine administrative rules strategy for interim  |  | Not Started (black_light) |         | 2025-03-31T08:20:00.000Z |
| Develop/adopt administrative rules   |  | Not Started (black_light) |         | 2028-07-01T08:20:00.000Z |
| Develop structure for governance   |  | Not Started (black_light) |         | 2025-03-01T08:20:00.000Z |
| Board Training   |  |                           |         |                          |

## **IV. HUMAN USES OF THE NATURAL AND CULTURAL RESOURCES OF MAUNA KEA AND THE IMPACTS OF THE HUMAN USES ON THESE RESOURCES**

The following activities or operations are ongoing on Mauna Kea:

1. Eleven (11) observatories conducted astronomical research in the Mauna Kea Science Reserve in fiscal years 2023 - 2024, and into fiscal year 2025.
2. Two (2) observatories on the summit were recently decommissioned:
  - a. UH-Hilo's Hōkū Kea Telescope completed June 2024.
  - b. The Cal-Tech Submillimeter Telescope completed July 2024.

This represents the first formal decommissioning of Mauna Kea telescopes in over thirty (30) years.

3. The Onizuka Center for International Astronomy Visitor Information Station (VIS) at Hale Pōhaku:
  - a. Contains educational signage, exhibits sharing Mauna Kea's cultural and natural history and resources, astronomy, and administrative rule requirements. The exhibits are developed, and updated regularly, to provide awareness about Mauna Kea's cultural heritage, natural environment, astronomical inquiry, safety, and permitted activities.
  - b. Hosts and conducts both nightly and other focused star-gazing activities and opportunities, utilizing both staff and volunteers.
  - c. Offers hiking routes around the VIS and Hale Pōhaku, as well as adjacent public lands.
  - d. Operates the First Light Book Store and e-store, offering items for visitors to purchase such as books, apparel, drinkware, posters, maps, and other items.
  - e. Trained staff at the VIS, and adjacent Ranger shack, provide primary health, safety, weather, and natural and cultural resource information to those visiting the Hale Pōhaku area and the summit.
4. Recreational Activity and Permits (all figures for the fiscal year 2024)
  - a. Hiking and bicycling. Over 6,000 individuals hiked or biked on trails or roadways to the summit. These include the DLNR-managed Humu'ula Trail starting opposite the Hale Pōhaku Mid-Level Facility, and Summit Access Road.
  - b. Filming. In fiscal year 2024 there were twenty (20) film permit applications submitted; five (5) were subsequently withdrawn, and one was rejected. Permits were issued for the remaining fourteen (14).

c. Other Permits

- Two (2) Research applications were approved.
- One Special Use Permit application was denied (U.S. Air Force, communications testing).

5. Vehicle Activity

- a. In fiscal year 2024, 139,352 vehicles arrived at or beyond the VIS. This represents all vehicles, including observatory staff and support, management staff and support, commercial vehicles, and local and non-local visitors.
- b. Visitor traffic (local and non-local) accounted for over 28,600 of those vehicles that proceeded to the summit, carrying over 73,000 people.
- c. Ranger Safety Briefings. All visitors traveling to the summit are briefed and the VIS control point by on-duty Rangers of the road conditions, hazards, four-wheel vehicle operations, etc. Additionally, the Rangers conduct vehicle brake temperature safety inspections on all returning vehicles to ensure safe travel by all in-coming visitors off the mountain.
- d. Road Closures. Summit weather conditions sometimes dictate road closures for safety reasons. In fiscal year 2024, there were twenty (20) full days of road closures and eighty-three (83) partial road closure days.

6. The Hale Pōhaku Mid-Level Support Facility provides food and lodging for those who work, conduct research, or provide technical support to the research activities on the Mauna Kea summit, and the ongoing stewardship efforts across the Science Reserve and the Hale Pōhaku support and visitor complex.

7. Maunakea Weather Center provides for weather research and forecasting capabilities, in support of the observatories and public information.

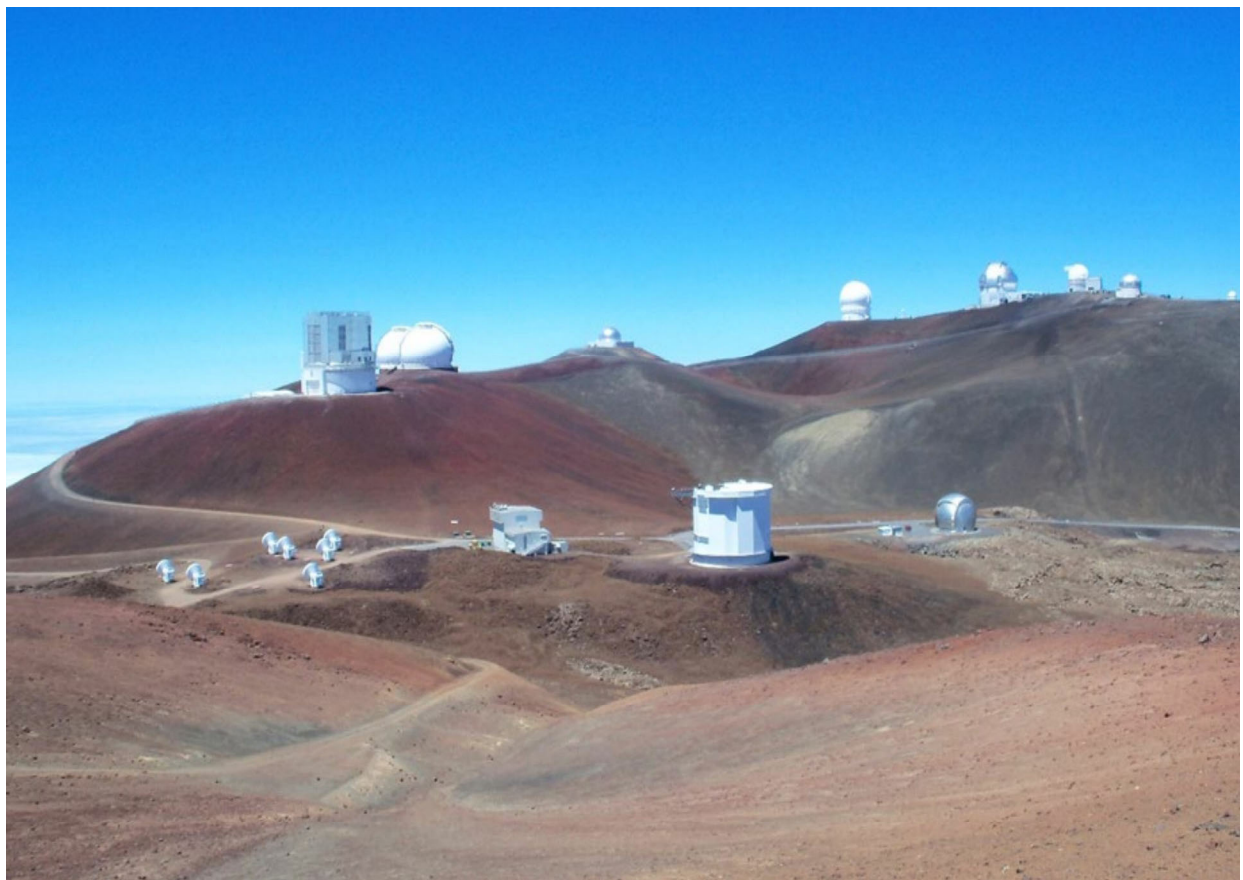
8. 'Āhinahina (Mauna Kea silversword) Propagation Program, and expansion of VIS out-planting effort with over two thousand (2,000) plant counts of five (5) different plant species.

The Authority has established a Permitted Interaction Group (PIG) that is currently meeting to develop the Authority's Management Plan that, among other things, minimizes and evaluates the impact of human uses on natural and cultural resources. The Authority issued a formal Request for Proposals (RFP) for a new Management Plan in October 2024 and is currently reviewing the results of that RFP.

The Authority and the UH Center for Maunakea Stewardship, through its recently established (August 2024) Joint Management Committee, have been monitoring all activities and issues on Mauna Kea, and issues and reports to the Authority identified by

the University of Hawai'i and Center for Maunakea Stewardship. Until the Authority completes its new Management Plan, they are reviewing the reports and issues jointly with the University of Hawai'i and Center for Maunakea Stewardship to identify opportunities for strengthening the Comprehensive Management Plan requirements and controls so as to form the development of the Authority's Management Plan, as well as their current Administrative Rules.

Under the Authority's current joint management relationship with the University of Hawai'i, and until the Authority has its plans, policies, and staff in place, the Center for Maunakea Stewardship (CMS) maintains responsibility for implementing the 103 management actions under their comprehensive management plan with the Authority. CMS provides periodic and timely updates to the Authority on the management actions taken (See Exhibit D for the latest report). In fulfilling their own reporting requirements to the Legislature, the University of Hawai'i has summarized the status of their stewardship activities for the fiscal year 2024 concerning the protection of the natural and cultural resources of Mauna Kea and various other matters.



## V. COMMERCIAL USES OF THE NATURAL AND CULTURAL RESOURCES OF MAUNA KEA AND THE IMPACTS OF THE COMMERCIAL USES ON THESE RESOURCES

The following commercial use activities occurred on Mauna Kea in Fiscal Year 2024:

### 1. Commercial Tours

- a. There are currently nine (9) operator permits issued.
- b. These permitted operators conducted 3,112 tours, carrying 36,890 guests.

### 2. Commercial Film Permits

As previously reported, twenty (20) film permits were issued by CMS, representing a mix of commercial vs. non-commercial/educational purposes.

The University of Hawai'i Institute for Astronomy (IFA) plays a significant role in the success of the State of Hawai'i's astronomy program and economy. This includes educational opportunities, scientific research and findings, hundreds of millions of dollars or more in internal and external funding, economic benefits through spending from visitors, advanced technology development programs, and others.

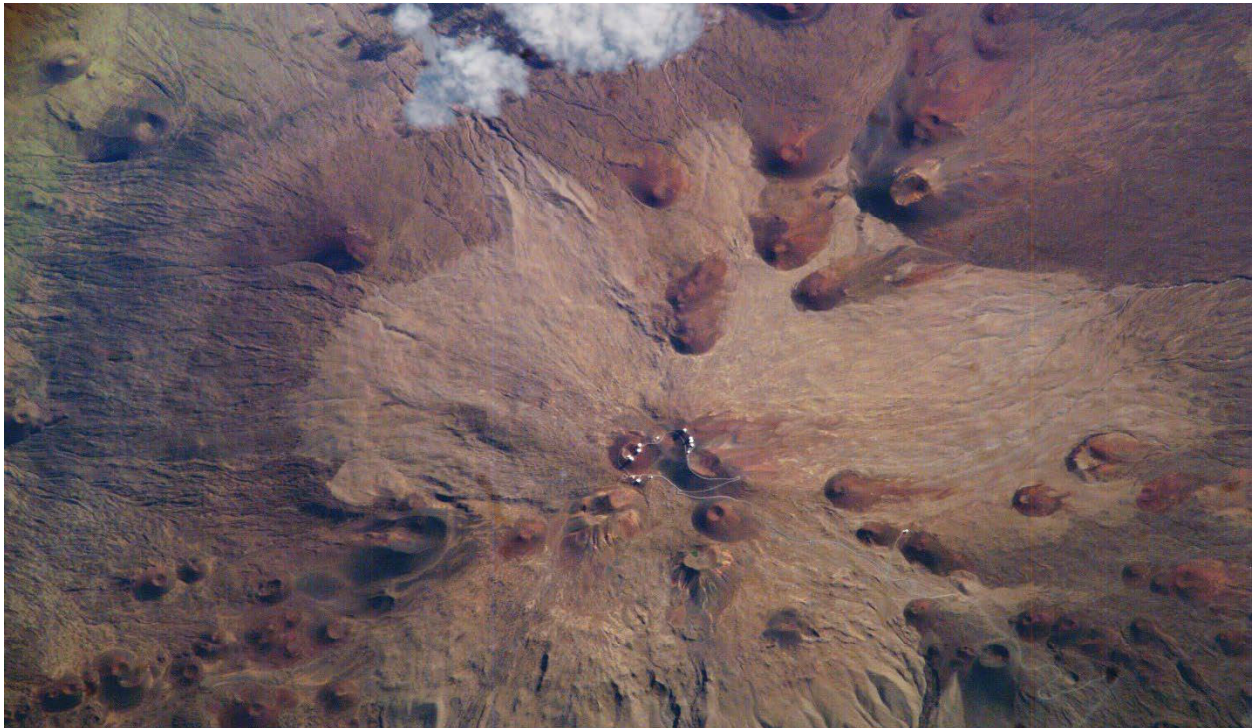


## **VI. AN ASSESSMENT OF CUMULATIVE IMPACTS TO MAUNA KEA**

While the University of Hawai'i's Center for Maunakea Stewardship has assessed the overall impact of residents and visitors, science, education, and others have placed on and impacted the Mauna Kea lands, the Authority plans to perform its own due diligence through the procurement of a consultant that can provide the expertise to independently report on the impacts, assess any damage, provide recommendations and solutions to overcome any impacts and prevent further harm to these sacred lands.

Under the Authority's current joint management relationship with the University of Hawai'i, and until the Authority has its plans, policies, and staff in place, the Center for Maunakea Stewardship (CMS) maintains responsibility for implementing the 103 management actions under their comprehensive management plan with the Authority. CMS provides periodic and timely updates to the Authority on the management actions taken. In fulfilling their own reporting requirements to the Legislature, the University of Hawai'i has summarized the status of their stewardship activities for the FY2023 concerning the protection of the natural and cultural resources of Mauna Kea and various other matters. The University of Hawai'i's 2024 report to the Legislature on their updates of actions to the management plan is included under Exhibit G.

Until the Authority hires the consultant, performs the study, and issues a report, the Authority will monitor the activities on Mauna Kea to ensure that requirements are met in accordance with the Comprehensive Management Plan 2022 Supplement that was approved by the University Board of Regents and the Board of Land and Natural Resources. This effort is ongoing.



## **VII. ALL COMMUNITY DIALOGUE, OUTREACH, ENGAGEMENT, AND CONSULTATION**

As previously reported, important scientific discoveries were determined from the observations on Mauna Kea including the accelerating expansion of the Universe, a supermassive Black Hole in the Milky Way galaxy, another planetary system, detection of asteroids that could potentially put the Earth at risk, finding water in protoplanetary discs from other solar systems, and others. Community education and outreach focuses on the importance of cultural and historical sites on Mauna Kea. It also provides opportunities that encourage students to explore STEM related careers in conservation, resource management, astronomy, education, and ‘āina stewardship.

CMS developed a new and updated education and outreach program. The program has three (3) areas of focus: exploration, conservation, and community with a priority on developing collaborative partnerships with UH programs, the State of Hawai‘i Department of Education (DOE), charter schools, and Native Hawai‘ian and other community organizations. The emphasis of these education and outreach programs is to incorporate active engagement through direct participation. For fiscal year 2024, according to data from CMS, five hundred seventy-one (571) volunteers assisted with the community workday programs, where about 3,000 youths and young adults participated in these programs. CMS also updated educational exhibits at the Visitor Information Station. New displays feature and provide background on Maunakea’s unique and special cultural heritage, natural environment, astronomy, and the stewardship programs. Improved signage has also been installed to educate visitors about visiting respectfully and safely while informing them of the administrative rules and permitted activities.

The Authority has also conducted three (3) “Community Talk-Story” sessions aimed at cultivating a positive relationship with the Hilo community and collecting crucial community input on MKSOA’s progress and direction for the future. MKSOA intends to conduct such sessions on a quarterly basis, moving beyond Hilo to the other major districts of Hawai‘i Island and onward to O‘ahu and the rest of the neighbor islands on an ongoing basis in the interest of transparency and collaborative stewardship.



## VIII. THE UNIVERSITY OF HAWAI'I'S USE OF ITS RESERVED VIEWING OR OBSERVING TIME



According to the University of Hawai'i Institute for Astronomy (IfA), (See Exhibit B prepared by the IfA) "Astronomers worldwide are provided observing time, at no charge to researchers, through peer reviewed competitive proposal systems, which are synchronized to occur twice a year." Through its UH 88 telescope and agreements with non-UH Maunakea Observatories, the IfA receives the following allocations of observing time on the Maunakea Observatories:

|  |      |
|--|------|
| 1. UH 2.2-m Telescope (UH 88)                | 100% |
| 2. Canada-France-Hawai'i Telescope (CFHT)    | 15%  |
| 3. NASA Infrared Telescope Facility (IRTF)   | 15%  |
| 4. United Kingdom Infrared Telescope (UKIRT) | 15%  |

|   |     |
|---|-----|
| 5. James Clerk Maxwell Telescope (JCMT) | 12% |
| 6. Subaru Observatory                   | 15% |
| 7. W.M. Keck I Observatory              | 10% |
| 8. W.M. Keck II Observatory             | 15% |
| 9. Gemini Observatory                   | 10% |
| 10. Submillimeter Array (SMA)           | 15% |
| 11. Very Long Baseline Array (VLBA)     | #   |

# - operates as a global interferometer

## **IX. SUMMARY**

Established on July 7, 2022, through the passage of Act 255, the Mauna Kea Stewardship and Oversight Authority is mandated to provide leadership in the protection of Mauna Kea for future generations and manage the lands for the purpose of fostering a mutual stewardship paradigm in which ecology, the environment, natural resources, cultural practices, education and science are in balance and synergy.

As such, the diversity of viewpoints, expertise and experience that is found on the Board of Directors of MKSOA is essential in charting a course forward while providing the framework within which the operating staff can implement the required planning measures and action steps.

Additionally, the sentiments and priorities being voiced by members of our island communities and stakeholders in general heightens the sense of urgency with which MKSOA's work must continue to accelerate. Building operating capacity and efficiency are priorities, as is the need to cultivate an environment of mutual trust and confidence, both internally and externally.

Increased significance remains on the working relationship between the Center for Maunakea Stewardship, Mauna Kea Shared Services and MKSOA, where all parties maintain a shared respect for one another and the respective work responsibilities held by each entity.

However, it should be noted that MKSOA does not intend to accept the transfer of the Conservation District Use Permits (CDUPs) that are currently held by the University of Hawai'i on behalf of the sub-lessors. To do so, could compromise MKSOA's regulatory oversight (post-transition) of the sub-lessor. MKSOA will continue to collaborate with CMS and UH to find a resolution.

# EXHIBIT A

## JOINT MANAGEMENT PROPOSAL UNDER DISCUSSION

### *Maunakea Executive Management Board (EMB)*

- BOR Board Chair and additional BOR member, preferably from Hawaii Island
- MKSOA Chair and additional MKSOA member, preferably from Hawaii Island

### *Maunakea Joint Management Committee (JMC)*

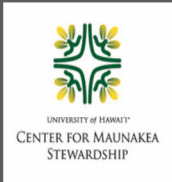
- CMS Executive Director and CMS Sr Staff
- MKSOA Executive Director and MKSOA Sr Staff
- By September 1, 2024, JMC develops a group charter that defines its purpose and operating rules
- JMC meets bi-weekly

### *JMC Focus*

- CMS Master Plan Type B and C projects
- Strategic Issues, e.g., CTO permits, cultural artifacts, MKAR issues, UHH New Educational Telescope, etc.
- Operational Updates
- Budget
- Staffing
- Program enhancements
- Permit/lease/rules violations
- Preparation/coordination of annual reports
- Special events
- Other

### *Roles*

- Each org operates within their respective legal authorities and obligations
- Decisions are made per each org's delegation of authority
- Disputes rise to the EMB
- Disputes not resolved at that level elevate to the BOR and MKSOA Board



## EXHIBIT B

| REPORT # OBBEXP1        |   | STATE OF HAWAII<br>OPERATIONAL EXPENDITURE PLAN |               |             |             |            |                             |         |           |         |               |  |  |
|-------------------------|---|---|---------------|-------------|-------------|------------|-----------------------------|---------|-----------|---------|---------------|--|--|
| FISCAL YR:              | 25  | 2024-25   |               |             |             |            |                             |         |           |         |               | DEPARTMENT OF LAND AND NATURAL RESOURCES |  |
| PROGRAM ID:             | LNR 909                                       |   |               |             |             |            |                             |         |           |         |               |  |  |
| TABLE-ID:               | A   |   |               |             |             |            |                             |         |           |         |               | DATE:                                    |  |
| PROGRAM TITLE:          | MAUNA KEA STEWARDSHIP AND OVERSIGHT AUTHORITY |   |               |             |             |            |                             |         |           |         |               |  |  |
| C                       |   |   |               | CURRENT     | NET         | CURRENT    | PLANNED EXPENDITURE PROGRAM |         |           |         | PLANNED       |  |  |
| R                       |   | T   | APPROPRIATION | RESTRICTION | TRANSFERS   | ALLOCATION | EXPENDITURE                 |         |           |         | EXPENDITURE   |  |  |
| D                       | PROGRAM REQUIREMENTS                          | R   | 2024-25       | 2024-25     | 2024-25     | 2024-25    | 1ST QTR                     | 2ND QTR | 3RD QTR   | 4TH QTR | PROGRAM TOTAL |  |  |
| 1.                      | PERSONAL SVCS (PAYROLL)                       |   | 800,000       | 80,000      |             | 720,000    | 159,000                     | 165,000 | 198,000   | 198,000 | 720,000       | 0  |  |
| 2.                      | ALL CB, OTHER SALARY ADJS                     |   |               |             |             | 0          |                             |         |           |         | 0             | 0  |  |
| 3.                      | FINANCING AGREEMENTS                          |   | 0             | 0           |             | 0          |                             |         |           |         | 0             | 0  |  |
| 4.                      | OTHER CURRENT EXPENSES                        |   | 13,200,000    | 311,316     | -10,000,000 | 2,888,684  | 50,000                      | 800,000 | 2,000,000 | 38,684  | 2,888,684     | 0  |  |
| 5.                      | OTHER COST ITEMS - ALL                        |   |               |             |             | 0          |                             |         |           |         | 0             | 0  |  |
| 6.                      | EQUIPMENT                                     |   | 0             | 0           |             | 0          |                             |         |           |         | 0             | 0  |  |
| 7.                      | MOTOR VEHICLE                                 |   |               |             |             | 0          |                             |         |           |         | 0             | 0  |  |
| C                       | PROPRIATION                                   |   | 14,000,000    | 391,316     | -10,000,000 | 3,608,684  | 209,000                     | 965,000 | 2,198,000 | 236,684 | 3,608,684     |  |  |
| R                       | =====   | T   | =====         | =====       | =====       | =====      | =====                       | =====   | =====     | =====   | =====         |  |  |
| D                       | FUND YR A R MOF                               |   |               |             |             |            |                             |         |           |         |               |  |  |
| 8.                      | G 25 109 A                                    |   | 0.00          |             |             |            |                             |         |           |         |               |  |  |
| 9.                      | G 25 109 A                                    |   | 14,000,000    | 391,316     | -10,000,000 | 3,608,684  | 209,000                     | 965,000 | 2,198,000 | 236,684 | 3,608,684     |  |  |
|                         |   |   |               |             |             |            |                             |         |           |         |               |  |  |
|                         |   |   | 0.00          |             |             |            |                             |         |           |         |               |  |  |
|                         | TOTAL APPROPRIATION                           |   | 14,000,000    | 391,316     | -10,000,000 | 3,608,684  | 209,000                     | 965,000 | 2,198,000 | 236,684 | 3,608,684     |  |  |
|                         |   |   |               |             |             |            |                             |         |           |         |               |  |  |
| Other Current Expenses: |   |   |               |             |             |            |                             |         |           |         |               |  |  |
|                         | Travel and Per Diem                           |   |               |             |             |            | 25,000                      | 25,000  | 25,000    | 25,000  | 100,000       |  |  |
|                         | Office  |   |               |             |             |            | 25,000                      | 25,000  | 25,000    | 13,684  | 88,684        |  |  |
|                         | Management Plan Consultant                    |   |               |             |             |            |                             |         | 1,950,000 |         | 1,950,000     |  |  |
|                         | Engineer/Architect Consulting                 |   |               |             |             |            |                             | 750,000 |           |         | 750,000       |  |  |
|                         | Total   |   |               |             |             |            | 50,000                      | 800,000 | 2,000,000 | 38,684  | 2,888,684     |  |  |

## EXHIBIT C

# Summary Report on UH Institute for Astronomy Maunakea Observing Time in 2024



December 2024

Doug Simons  
Director, UH Institute for Astronomy

Photo: Bo Reipurth, IfA



## Observing Time Allocations – 2024A and 2024B

Observing semesters run from February through July (“A” semester) and August through January (“B” semester). Observing time is awarded to IfA faculty, postdoctoral researchers and graduate students via peer reviewed proposals that are scored by IfA’s Time Allocation Committee (TAC). The TAC is composed of IfA faculty, postdocs and graduate students, with memberships rotating every 3 years. Each semester the TAC submits their evaluations of proposals, based upon scientific merit and technical feasibility, to the IfA Director for final review and execution. The TAC proposal evaluations lead to prioritized lists of observing programs that are awarded observing time, utilizing all of the time available for each Maunakea Observatory (MKO). UH Hilo astronomy researchers also receive observing time through this system.

With that procedure as background, listed in Appendix A are the titles of IfA observing programs executed on various Maunakea Observatories in 2024. These are provided to give visibility into the rich diversity of applications IfA makes from access to the MKOs. Some of these programs use more than one telescope, are recurring from one semester to the next as long-term programs, or involve other ground and space based astronomical research facilities. In other words, there are many inter-connections involving research, technology, and education associated with these program titles. It is also important to note that some programs require hundreds of nights to complete but only appear as a single title in the lists provided. Appendix B provides additional important background information about the State of Hawai’i’s astronomy program, including international context and fractions of time provided by each facility.

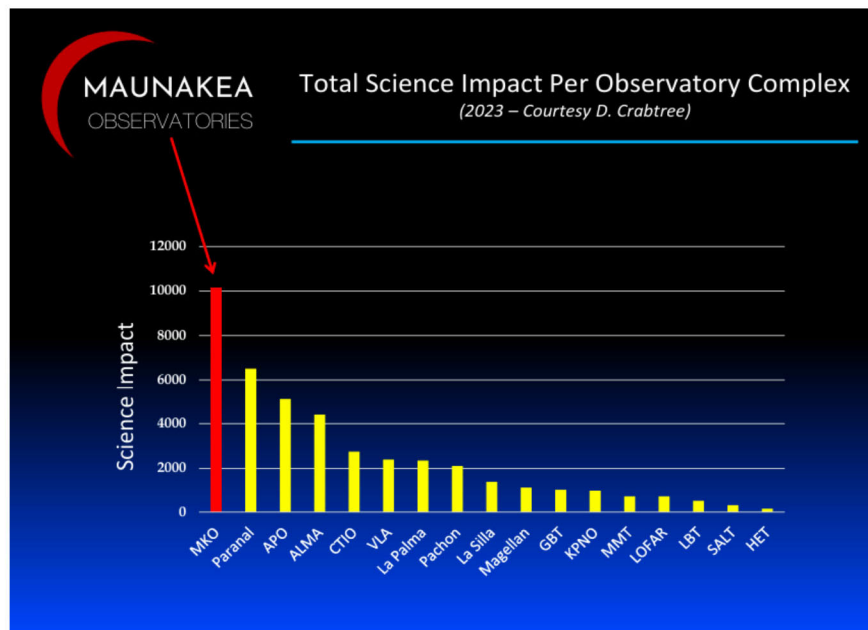


Figure 1 – The total science impact, which gauges the number and quality of research publications derived from various observatories, is a useful metric to compare the Maunakea Observatories to other co-located observatories worldwide. By this metric, the MKOs consistently rank #1 globally, an indication of how important these facilities are to the field of astronomy.

## 2024 Publications

IfA researchers have published 299 refereed journal articles in 2024, of which 143 used MKO data. Of these 143 articles, 43 listed one or more IfA graduate students as a co-author, or 30% of this year's papers. These publication statistics, sorted by facility use, are captured in the two pie charts below (ordered by overall use on the left and by student use on the right). The largest optical/infrared facilities remain in high demand in particular, though key research is being done on all facilities which are 100% subscribed by IfA faculty, post docs, and students.

Referring back to last year's report, for the period 2023-2024, IfA published 588 refereed journal articles altogether, of which 266 used data from one of the Maunakea Observatories. Of those 153 articles, 76 listed an IfA graduate student as a coauthor. Graduate students make exceptional use of the MKOs for their research – a resource that few university astronomy programs can offer students and making them particularly competitive post-graduation, as they forge their young careers. Graduate students at IfA serve as Principal Investigators for their observing proposals, and in that sense develop an end-to-end research experience during their graduate studies, from developing a concept for research, through submitting observing proposals, reducing their data, interpreting results, and having it published.

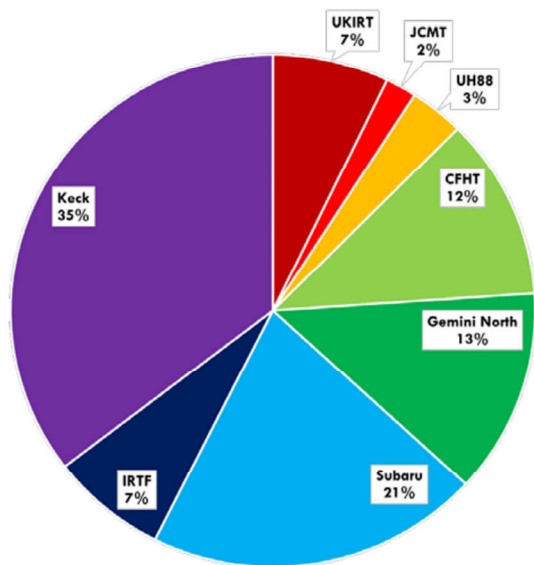


Figure 2 - MKO data sources for IfA-coauthored refereed articles in 2024.

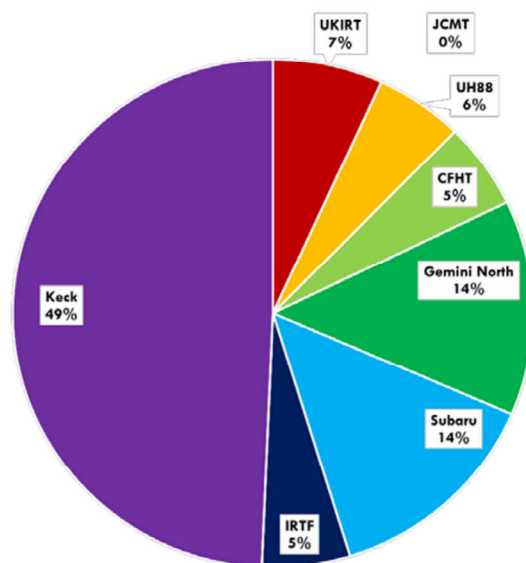


Figure 3 - MKO data sources for refereed articles with an IfA graduate student coauthor in 2024.



## Key Education and Research Outcomes

The world class research conducted at IfA is manifest in many ways, like prestigious awards given to faculty, including this year to Dr. Ben Shappee, a recipient of the UH Regents Award for Research. Dr. Shappee specializes in time-domain astronomy and helped found the All-Sky Automated Survey for Supernovae. He was among the first astronomers to identify the optical counterpart to the gravitational wave event associated with a kilonova (merging neutron stars), and his program detected the most luminous supernova ever identified. He has nearly 300 publications and over 20,000 citations associated with his work.

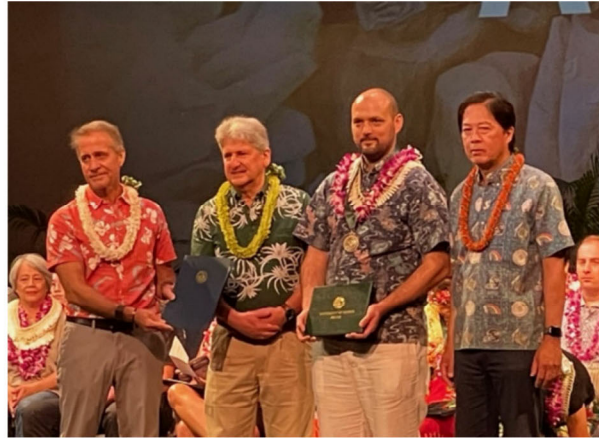
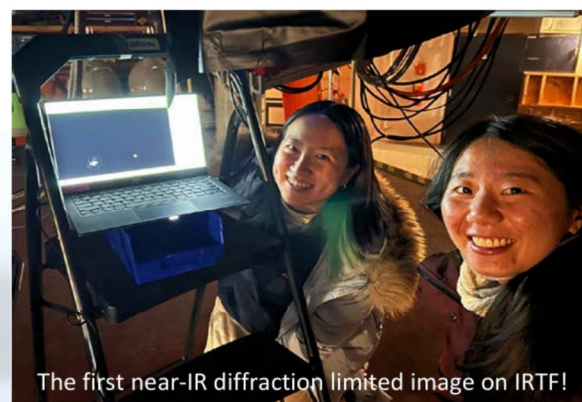
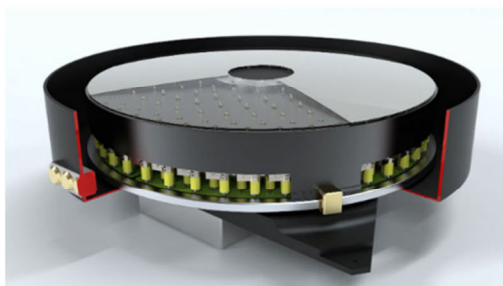


Figure 4 – Dr. Ben Shappee, third from the left, received the 2024 UH Regents award for Research.

Technology development is also critical to IfA's mission, with some of the most advanced electro-optics on Maunakea now being deployed at the UH 88" telescope. Combined with a recent \$5M refurbishment, that new technology includes a new laser adaptive optic system, and a new control system that will make the UH 88" the first robotic (fully autonomous) observatory on Maunakea. In 2025 a new adaptive secondary mirror (ASM) will also be deployed on the UH 88", after the first of these mirrors was successfully commissioned on the NASA Infrared Telescope Facility (IRTF) in 2024. These new ASMs are significantly lower mass, lower cost, and operate with higher efficiency than any other ASM built to date. The result of a collaboration with other universities and an industrial partner, the IfA's ASM project provides phenomenal educational opportunities for graduate students interested in pursuing instrumentation careers in astronomy – a unique strength of IfA's program.



The first near-IR diffraction limited image on IRTF!

Figure 5 - The first adaptive secondary mirror ever deployed on Maunakea was developed by a team lead by Dr. Mark Chun at IfA. Funded by NSF, this revolutionary technology will help observatories achieve "built in" adaptive optics to correct for atmospheric distortion. Seen above are two IfA graduate students involved in this program.

The reach of IfA's education program goes well beyond the confines of UH's campuses, thanks to extensive efforts on nearly all islands by IfA's staff, students, and faculty. Some of the IfA's signature programs include Astro Day in Hilo and Kona, held twice annually. These large events, conducted at shopping malls, attract thousands of people across Hawai'i Island and include booths and exhibits from dozens of STEM organizations that IfA partners with. On Maui IfA's Hi Star program engages high school students year round, with an emphasis on research each summer through an intensive camp in which students expand their skills in data analysis and scientific methods, often going on to use what they've learned in local science fairs. At Mānoa IfA's annual open house program is a big hit with kids of all ages, who are treated to everything from craft booths, to rocket experiments and demonstrations of cryogenics. Maunakea Scholars continues at a good pace, including schools on the smaller neighbor islands (Lāna'i and Moloka'i) which have historically not received as much benefit from Hawai'i astronomy compared to other islands. Over 1200 students have participated in this program since its inception in 2015 and it remains the only program of its kind in the world, connecting high school students to Hawai'i's only billion dollar research complexes on Maunakea and Haleakalā.



Figure 6 – Top left – IfA faculty and students supporting Astro Day at the Hilo Prince Kuhio Mall. Top right – Faculty and students supporting Rocketry day in downtown Hilo. Bottom left – A cryogenics demonstration captivates adults and children during the IfA Mānoa Open House event held each spring. Bottom right – Maunakea Scholars awards ceremony at Waipahu High School.

## **Summary**

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Observing time on the MKOs is fundamental to the success of the State of Hawai'i's astronomy program. From that key resource stems educational opportunities, scientific prestige and leadership for Hawai'i, hundreds of millions of dollars in extramural funding, advanced technology development programs, broad economic benefit and diversification for our communities, and much more. The IfA's program helps leverage that resource for multilateral benefits, consistent with the mission of the University of Hawai'i, and the vision of those who inspired Maunakea astronomy decades ago.

## Appendix A

### IfA Observing Programs Selected for Execution - Semester 2024A

#### CFHT

- Rapid follow-up of kilonovae during LIGO/Virgo/KAGRA 4th obs run and other transients
- Rapid follow-up of important solar system discoveries from Pan-STARRS
- Hawaii+Euclid: the foremost extragalactic deep field in the northern hemisphere
- Observations of Near-Earth objects
- Long period comets and the comet interceptor mission
- Extending dynamical masses to the planetary-mass regime

#### Gemini

- 3I - Characterizing the 3rd interstellar object
- Rapid follow-up of kilonovae during LIGO/Virgo/KAGRA 4th obs run and other transients
- Long period comets and the comet interceptor mission
- The NIR lifetimes of SNe Ia viewed through spectroscopy
- Mind the gap: bridging the radius valley with keystone planets from TESS
- Composition of rocky planets around thick-disk stars
- A more complete picture: NIR observations of SNe Ia for physics and cosmology
- Rotation of comet 22P/Kopff

#### JCMT

- Sub-mm follow-up of a newly discovered kilonova
- Direct measurements of envelope evolution in protostars
- Developing a sample of faint submm sources and determining their properties
- Lynds 914: a new star-forming filament in Cygnus
- Structure and kinematics of the Bok globule B62

#### Keck 1

- Spectroscopic observations of exciting ASAS-SN, ATLAS, PS, LIGO transients & novel small bodies
- The metallicity and distance of M 101 from blue supergiants
- The architecture and orbital dynamics of transiting S-type planets in close binaries
- Revealing dynamical architectures of transiting brown dwarfs
- The first asteroseismic survey of nearby K dwarfs
- High-precision test of substellar cooling with asteroseismology
- The fate of planets orbiting evolved stars
- Transmission and emission spectroscopy of ultra-hot Jupiters with KPF
- NIR spectroscopy of high-z protoclusters in Euclid Deep Field North
- Exploring the radius inflation anomaly in transiting brown dwarfs

## Keck 2

- Pinning down the Hubble constant with an eclipsing binary distance to Andromeda
- Spectroscopic observations of exciting ASAS-SN, ATLAS, PS, LIGO transients & novel small bodies
- 3-D morphology of exoplanet mass loss revealed by Keck/NIRSPEC
- Spectroscopic redshifts of strongly lensed galaxies
- Exploring the local environments of 2002es-like SNe Ia
- Deciphering stellar feedback and gas accretion in low-mass starbursts
- Extending dynamical masses to the planetary-mass regime
- Ly-alpha morphologies of z=6.6 ultraluminous Ly-alpha emitters
- Infrared AO survey for the nearest protoplanetary systems
- Mind the gap: bridging the radius valley with keystone planets from TESS
- Resolving protoplanetary disk kinematics to interpret JWST spectra
- The architecture and orbital dynamics of transiting S-type planets in close binaries
- Feeding time: high S/N optical spectroscopic follow-up of tidal disruption events and ANTs

## SMA

- Sub-mm follow-up of a newly discovered kilonova
- Search for small sulfuretted species in 5 chemically rich class 0 protostars in Perseus

## Subaru

- Imaging disks around embedded protostars with SCExAO
- High-resolution polarimetric imaging of debris disks
- Setting the fundamental mass and radius scale of oscillating red giants
- The architecture and orbital dynamics of transiting S-type planets in close binaries
- Deep visible polarimetric imaging of planet-forming regions with VAMPIRES
- Ophiuchus disk survey
- Dipper stars: birth cry of planets or death-rattle of comets?
- WHIGS as part of the UNIONS survey
- Hawaii+Euclid: the foremost extragalactic deep field in the northern hemisphere
- Metallicity distributions of ultra-faint dwarf galaxies using HSC Ca II H&K NB imaging
- HSC search for near Earth objects at small solar elongation
- Extreme trans-Neptunian objects

## UH 88"

- Spectroscopic observations of exciting ASAS-SN, ATLAS, PS, LIGO transients & novel small bodies
- Filling the gap: follow-up observations of Pan-STARRS NEO candidates
- Observations of Near-Earth objects
- Optical-IR spectroscopic extinction curves in the diffuse interstellar medium

## UKIRT

- A more complete picture: NIR observations of SNe Ia for physics and cosmology

## IfA Observing Programs Selected for Execution - Semester 2024B

### CFHT

- Rapid follow-up of kilonovae during LIGO/Virgo/KAGRA 4th obs run and other transients
- Rapid follow-up of important solar system discoveries from Pan-STARRS
- Hawaii+Euclid: extragalactic deep fields in the northern & southern hemispheres
- Spectropolarimetric signal for stellar activity: spot, flare and CME
- Characterizing the rotation and activity for comet 88P/Howell
- Observations of Near-Earth objects
- Extending dynamical masses to the planetary-mass regime
- Searching for high-z AGNs in the deepest hard X-ray image
- Mass, orbit and atmosphere of the youngest known transiting planet
- Mass, orbit and atmosphere of the youngest known transiting planet

### Gemini

- 3I - Characterizing the 3rd interstellar object
- Rapid follow-up of kilonovae during LIGO/Virgo/KAGRA 4th obs run and other transients
- Spectrosc obs of exciting ASAS-SN, ATLAS, PS, LIGO transients & novel small bodies
- Characterizing the rotation and activity for comet 88P/Howell
- Type Ia supernovae: breaking out of redshift jail with JWST
- Precise masses and compositions of extreme Earths
- Modeling long-period comet sizes to probe the history of the Solar System
- Mind the gap: bridging the radius valley with keystone planets from TESS
- Spectroscopic follow-up of directly imaged substellar companions
- The NIR lifetimes of type Ia supernovae viewed through spectroscopy

### JCMT

- JWST, SCUBA-2, and the global star formation history
- Sub-mm follow-up of a newly discovered kilonova

### Keck 1

- Spectrosc obs of exciting ASAS-SN, ATLAS, PS, LIGO transients & novel small bodies
- JWST, SCUBA-2, and the global star formation history
- Hot jupiter companions in evolved systems
- Architecture and orbital dynamics of transiting S-type planets in close binaries
- Architecture and orbital dynamics of transiting S-type planets in close binaries
- Architecture and orbital dynamics of transiting S-type planets in close binaries
- Testing spin-orbit realignment with planets orbiting subgiants
- Asteroseismology of nearby Sun-like stars with Keck planet finder
- Transmission and emission spectroscopy of ultra-hot Jupiters with KPF
- Taking the dynamical temperature of planetary systems

- Revealing dynamical architectures of brown dwarfs transiting subgiant stars
- Confirming the earliest galaxies and galaxy clusters with H2O and Euclid
- Spectroscopic census of dusty starbursts in PRIMER (preallocated to Hilo)

### Keck 2

- Spectroscopic redshifts of strongly lensed galaxies
- Spectrosc obs of exciting ASAS-SN, ATLAS, PS, LIGO transients & novel small bodies
- Mapping the interplay of atomic gas, metallicity and stellar feedback
- Feeding time: high S/N optical spectroscopic follow-up of tidal disruption events and ANTs
- Architecture and orbital dynamics of transiting S-type planets in close binaries
- Probing the origins of Ca-rich transients through their host-galaxy properties
- Search for an accreting protoplanet in the HD34700 inner cavity
- Resolving protoplanetary disk kinematics to interpret JWST spectra
- Extending dynamical masses to the planetary-mass regime
- 3-D morphology of exoplanet mass loss revealed by Keck/NIRSPEC
- Pinning down the Hubble constant with an eclipsing binary distance to Andromeda
- Ly-alpha morphologies of z=6.6 ultraluminous Ly-alpha emitters
- Spectroastrometry of disks around Herbig stars
- Infrared AO survey for the nearest protoplanetary systems

### SMA

- Sub-mm follow-up of a newly discovered kilonova
- Search for small sulfuretted species in 6 chemically-rich massive young stellar objects
- A millimeter survey of disks around Herbig stars

### Subaru

- Imaging disks around embedded protostars with SCExAO
- Deep visible polarimetric imaging of planet-forming regions with VAMPIRES
- Uncovering the mystery of missing galaxies in massive high-z protoclusters
- Setting the fundamental mass and radius scale of oscillating red giants
- Search for an accreting protoplanet in the HD34700 inner cavity
- Spectroscopic follow-up of directly imaged substellar companions
- Further exploration of Dracula's Chivito
- WHIGS as part of the UNIONS survey
- Searching for high-z AGNs in the deepest hard X-ray image
- Extreme trans-Neptunian objects
- HSC search for near-Earth objects at small solar elongation
- Hawaii+Euclid: extragalactic deep fields in the northern & southern hemispheres

#### **UH 88"**

- Spectrosc obs of exciting ASAS-SN, ATLAS, PS, LIGO transients & novel small bodies
- Optical-IR spectroscopic extinction curves
- Long eclipse events in YSOs
- Filling the gap: follow-up observations of Pan-STARRS NEO candidates
- Observations of Near-Earth objects

#### **UKIRT**

- Long eclipse events in YSOs
- NIR observations of type Ia supernovae for physics and cosmology



## Appendix B

### Background

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A number of major astronomical observatory complexes have been established at sites around the world. In exchange for site access to build and operate observatories, often the governing entities for those sites receive observing time as a form of compensation for land access. Examples of this include the governments of Chile, Spain, and Hawai'i, all of which receive observing time on observatories they host, through their respective university systems. This allows each of these governments to support robust astronomy research and education programs at vastly reduced cost compared to building and operating entire observatory complexes themselves. In the case of the Maunakea Observatories (MKOs), the replacement cost for the existing observatories exceeds \$1B. The vast majority of the construction and operating costs for the MKOs is provided by Federal research sponsors, including NASA, National Science Foundation, National Research Council (Canada), Centre national de la recherche scientifique (CNRS, France), the National Astronomical Observatory of Japan, etc. Astronomers worldwide are provided observing time, at no charge to researchers, through peer reviewed competitive proposal systems, that are synchronized to occur twice a year. In the US this Federal funding for astronomy research is akin to Federal sponsorship of research in medicine/health (NIH), chemistry, geology, mathematics, etc. After a proprietary period most of the data sourced by the MKOs is stored in public archives. This helps maximize the scientific product of and public access to this valuable resource.

The Hawai'i State astronomy program emerged in 1964 when Governor Burns advanced a vision for Hawai'i predicated on Hawai'i's unique natural resources, among them the pristine, clear and calm air above Maunakea. It was also motivated by the Hawai'i Island community's desire to rebuild and diversify their economy after the 1960 earthquake in Chile left Hilo in ruins through a devastating tsunami. That confluence of events, among other factors, led to Maunakea astronomy today being world leading in its total scientific impact – a metric that gauges the number and quality of peer reviewed research publications. The Hawai'i State government identified the University of Hawai'i as the host for the State's astronomy program, which in turn led to the formation of the UH Institute for Astronomy (IfA) roughly 50 years ago. Today IfA has 35 faculty (26 are MKO users, the rest study solar, theory, etc.), 43 graduate students (32 are MKO users), and 17 postdocs (about a dozen are MKO users). Hawai'i is now recognized internationally as a premier location to conduct astronomical research. The MKOs are an economic aggregator for international funds used to sponsor their operations. They employ ~600 people in what is likely the largest assemblage of STEM jobs on Hawai'i Island.

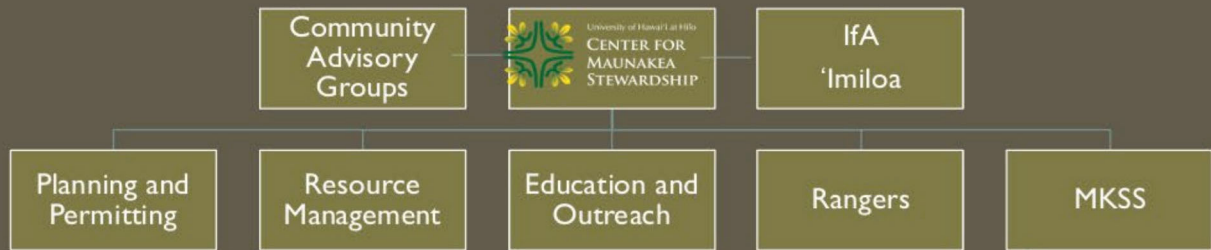
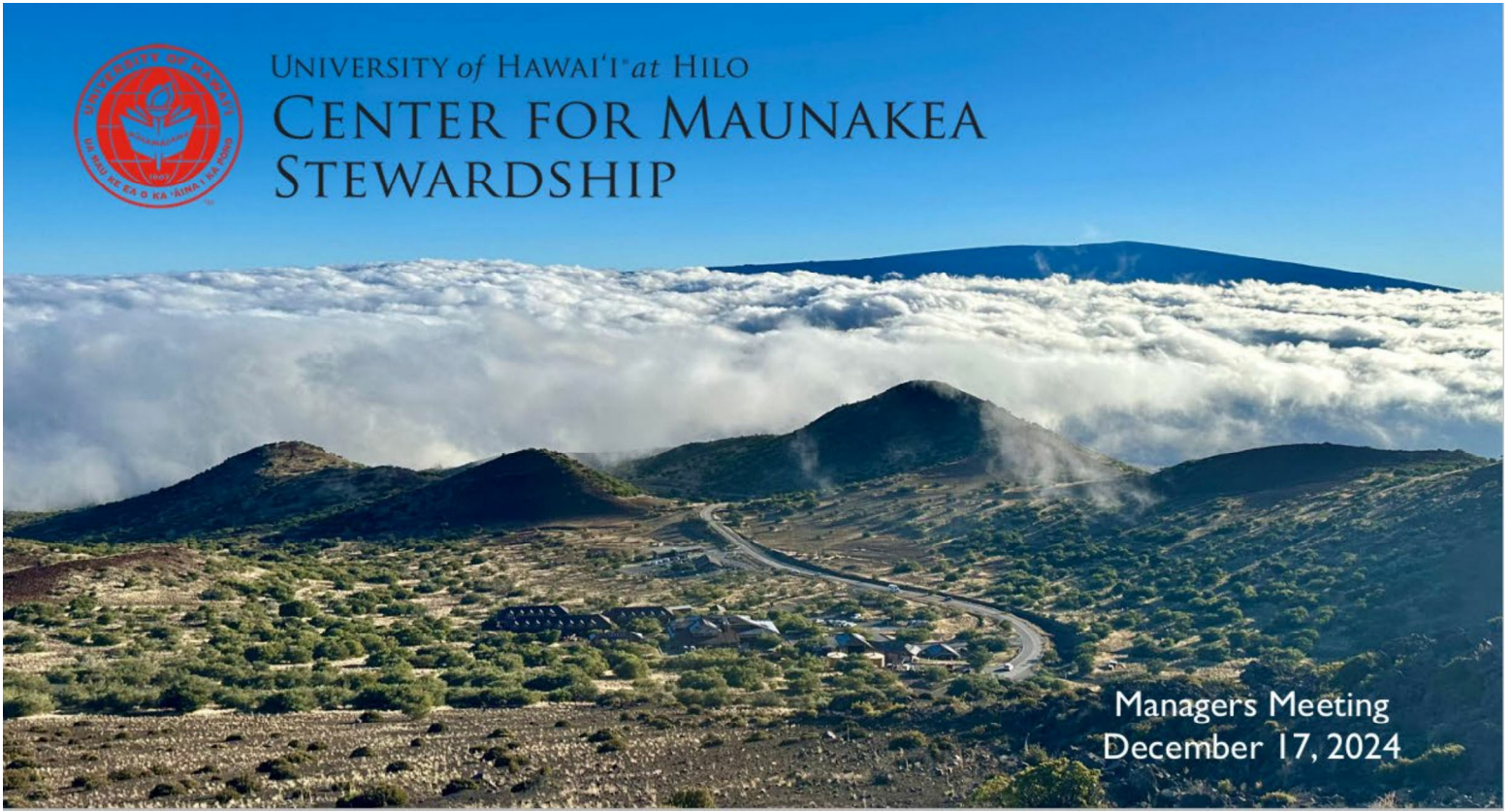
Through its UH 88" telescope and agreements with non-UH MKOs, the IfA receives the following allocations of observing time on the MKOs -

|        |      |
|--------|------|
| UH 88" | 100% |
| CFHT   | 15%  |
| IRTF   | 15%  |
| UKIRT  | 15%  |
| JCMT   | 12%  |
| Subaru | 15%  |
| Keck 1 | 10%  |
| Keck 2 | 15%  |

|        |     |
|--------|-----|
| Gemini | 10% |
| SMA    | 15% |

Not included on this list are CSO and Hoku Kea (both decommissioned) and VLBA, which operates only as a global interferometer, not standalone on Maunakea for UH access.

# EXHIBIT D



### CMS MISSION

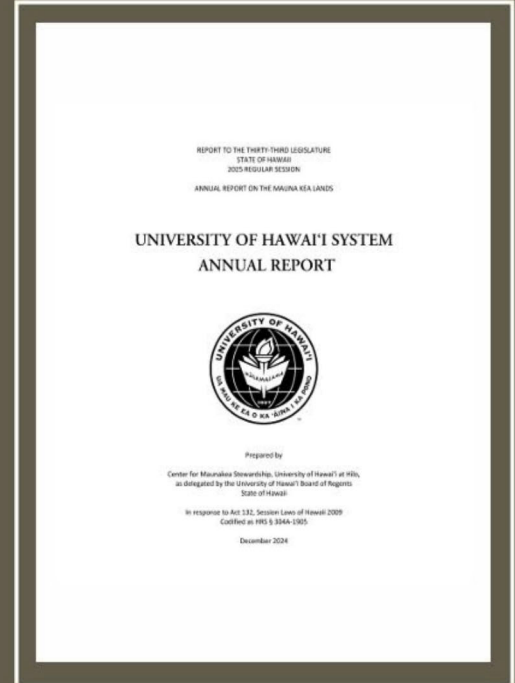
*“Sustainably steward Maunakea for the benefit of our communities, Hawai’i, and the world, as a publicly-accessible learning landscape where all who visit learn, and those who seek something more discover through rich multi-cultural experiences and engaging multi-disciplinary discourse. Provide equal opportunities across the schools of the UH system and community partners to engage with the mauna in ways that perpetuate and advance knowledge, wisdom, and values while fostering mutual understanding and respect.”*

- 50-55 Employees at any given time
- 24/7/365 Operation
- ≈11,400 acres
- 9 Subleases + 20 CDUPs + OSDA’s + MP + CMP + Admin Rules
- Annual Budget:
  - ✓ Stewardship ≈\$3M (TFSF + RTRF + Special Funds)
  - ✓ MKSS ≈\$5.5M (User fees ⇨ Cost + Admin)

# ANNUAL REPORT TO THE LEGISLATURE

PURSUANT TO HAWAII REVISIED STATUTES (HRS) § 304A-1905, "MAUNA KEA LANDS; REPORTING REQUIREMENTS"

- ❖ Maunakea lands activities
- ❖ Current and pending lease agreements and fees
- ❖ Status of current and pending administrative rules
- ❖ Income and expenditures of the Mauna Kea lands management special fund established in HRS § 304A-2170
- ❖ Other issues that may impact the activities on the Mauna Kea lands
- ❖ Consistent with past practice, this report covers the fiscal year 2024 (FY24), which started on July 1, 2023, and ended on June 30, 2024, but may also include matters and data outside FY24 where relevant



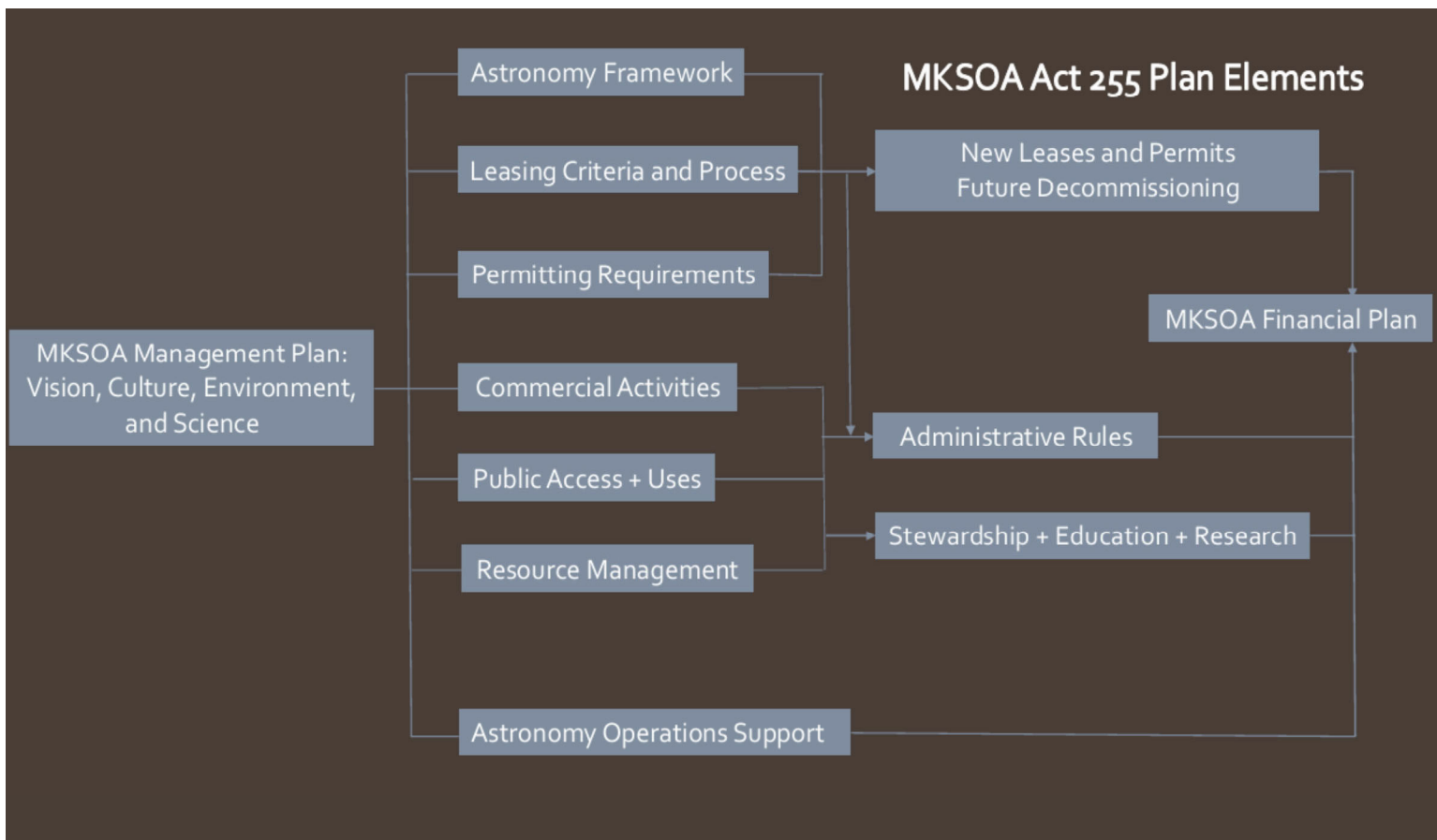
## MAUNAKEA MANAGEMENT



### Key Considerations:

- Culturally sensitive lands
- Diverse public uses
- Conservation district requirements
- Astronomy as State policy
- Act 255 requirements





## REAL PROPERTY AGREEMENTS

- General Lease No. S-5529 (Hale Pōhaku Mid-Level Facilities). Approximately 19.261 acres. Entered into on September 21, 1999, and expires on February 27, 2041.
  - General Lease No. S-4191 (Mauna Kea Scientific Reserve). Approximately 13,321.054 acres. Entered into on June 21, 1968, and expires on December 31, 2033. Amended by the Partial Withdrawal of approximately 2,033.2 acres for the Mauna Kea Ice Age Natural Area Reserve on March 23, 1998.
  - Grant of Easement No. 4697 (Roadway easement from Hale Pōhaku Mid- Level Facilities to the Summit of Mauna Kea). Approximately 70.798 acres. Entered into on September 8, 1981, and expires on December 31, 2033.
- Subleases:
- Canada-France-Hawai'i Telescope ("CFHT"), 1975-Dec-18, Canada-France-Hawai'i Telescope Corporation
  - Caltech Submillimeter Observatory ("CSO"), 1983-Dec-20, California Institute of Technology Corporation
  - Gemini North ("Gemini"), 1994-Sep-26, National Science Foundation
  - Subaru Telescope ("Subaru"), 1992-Jun-05, National Astronomical Observatory of Japan
  - Smithsonian Submillimeter Array ("SMA"), 1995-May-15, Smithsonian Astrophysical Observatory
  - Thirty Meter Telescope ("TMT"), 2014-Jul-28, TMT International Observatory LLC
  - NASA Infrared Telescope Facility ("IRTF"), 1974-Nov-29, National Aeronautics and Space Administration
  - Very Long Base Array ("VLBA"), 1990-Sep-28, Associated Universities, Inc.
  - W. M. Keck Observatory ("Keck"), 1985-Oct-30, California Institute of Technology Corporation



## LAND USE ENTITLEMENTS CDUPS+

### CDUPs related to Improvements Owned by Private Entities (“MKO CDUPs”):

- CFHT, 1974-May-24, CDUP 0527
- CSO, 1982-Nov-17, CDUP 14923
- Gemini, 1994-Apr-12, CDUP 2691
- Subaru, 1991-Sep-27, CDUP 2462
- SMA, 1994-Nov-18, CDUP 2728
- TMT, 2017-Sep-28, CDUP 3568
- IRTF, 1975-Aug-29, CDUP 06534
- VLBA, 1989-Jan-13, CDUP 2174
- Keck I (includes temporary use of concrete batch plant and expansion of Hale Pōhaku), 1984-Aug-24, CDUP 1646
- Keck II, 1992-Apr-10, CDUP 2509

### CDUPs related to Mauna Kea Access Road and Improvements Owned by the University (“UH CDUPs”):

- Hōkū Ke‘a Observatory Decommissioning Project, 2023-April-14, HA-39065
- Air Force Telescope, Planetary Patrol Telescope, 2.2-Meter Telescope (“UH 88”), 1977-Sep-9, CDUP 09546
- JCMT, 1983-Feb-25, CDUP 1515
- UKIRT, 1975-Aug-29, CDUP 06537
- UKIRT dormitory at Hale Pōhaku, 1976-May-14, CDUP 0781
- Hale Pōhaku Mid-Level Facilities and Visitor Center (“Mid-Level Facilities”), 1982-Apr-23, CDUP 1430
- Hale Pōhaku dormitories, 1977-May-13, CDUP 0895
- Hale Pōhaku subdivision and construction workers camp, 1986-Feb-14, CDUP 1819
- Infrastructure Improvements to Maunakea Visitor Center, 2018-Jun-8, CDUP 3812
- Mauna Kea Access Road, 1974-Jun-14, CDUP 0537

## SCIENTIFIC COOPERATIVE AGREEMENTS/ OPERATING AND SITE DEVELOPMENT AGREEMENTS

- Details various terms and conditions between UH and each MKO
- Contains both common elements across agreements as well as conditions specific to the relationship between UH and the particular MKO.
- This is where UH observing time allocations are documented.
- Requires unbundling of what are unique UH-relevant conditions versus what MKSOA would assume based on their legislated authorities.

### Examples:

- Contributions to building of the mid-level facilities at Hale Pōhaku (Multiple)
- Contributions to building of MK infrastructure (Multiple)
- *MKSOA* "shall make every effort to ensure renewal, extension, or renegotiation of said General Lease." (Gemini)
- *MKSOA* "shall use its best efforts to secure Lessor's consent and to provide its own approval or objection within SIXTY (60) days after receipt by Sublessor of any request for approval for such structural alteration or addition." (Gemini)

## UH ASSETS

In addition to the above, the University also holds over 20 permits and approvals issued under Hawai'i Administrative Rules ("HAR") Chapter 13-5 for uses within the conservation district. Many of the conditions of approval imposed under these permits and approvals are ongoing commitments under the 2009 Mauna Kea Comprehensive Management Plan ("CMP"), updated by the "Comprehensive Management Plan 2022 Supplement," approved by BLNR on July 22, 2022 ("CMP Update").

Improvements Owned by the University ("UH Assets"):

- UH 88, 2.2-meter (88-inch) telescope
- JCMT, 15-meter telescope
- UKIRT, 3.8-meter telescope
- Mid-Level Facilities (Hale Pōhaku)
- University-owned conduit and fiber optic network ("UH Network")

## OTHER

- Staffing/Positions
- Accounts (e.g., Maunakea Management Special Fund, Summit Utilities Decommissioning Fund, RCUH accounts, etc.)
- Inventory of Physical Assets
- Operations permits
- Files and Records



## TRANSFERS ASSUME THESE ARE IN PLACE

- MKSOA Management Plan to fulfill CDUP requirements
- MKSOA Administrative Rules to manage public access, commercial activities, and other activities that MKSOA has jurisdiction for
- Organizational capacity to assume operations
- Regarding future real property agreements with UH, MKOs, and others: clarification on how does MKSOA hold land “title” for current UH-managed lands?